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THE COGNITIVE ENVIRONMENTS OF URBAN PRE-SCHOOL CHILDREN.  
MANUAL OF INSTRUCTIONS FOR ADMINISTERING AND SCORING TOY  
SORTING TASK.

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THIS MANUAL DESCRIBES MEASURES USED IN "THE COGNITIVE ENVIRONMENTS OF URBAN PRE-SCHOOL CHILDREN" PROJECT AT THE UNIVERSITY OF CHICAGO. THE SAMPLE FOR THE STUDY CONSISTED OF 163 NEGRO MOTHER-CHILD PAIRS SELECTED FROM 3 SOCIOECONOMIC CLASSES BASED ON THE FATHER'S OCCUPATION AND THE PARENTS' EDUCATION. A FOURTH GROUP INCLUDED FATHER-ABSENT FAMILIES. THE MOTHERS WERE INTERVIEWED AT HOME AND THE MOTHERS AND CHILDREN WERE TESTED AT THE UNIVERSITY OF CHICAGO WHEN THE CHILDREN WERE 4 YEARS OLD. FOLLOW-UP DATA WERE OBTAINED WHEN THE CHILDREN WERE 6 AND AGAIN WHEN THEY WERE 7. THE TOY SORTING TASK WAS THE FIRST OF 3 MOTHER-CHILD INTERACTION TASKS GIVEN DURING THE SECOND UNIVERSITY TESTING SESSION. THE OTHER 2 ARE DESCRIBED IN MANUALS PS 000 487 AND PS 000 489. THE TASK CONSISTED OF GROUPING 9 TOYS INTO 3 CLASSES BASED ON EITHER THE KIND OF TOY OR ITS COLOR. THE MOTHER WAS SHOWN THE 2 POSSIBLE SORTING METHODS AND WAS THEN ASKED TO TEACH HER CHILD HOW TO SORT THE TOYS BOTH WAYS. THE MOTHER WAS GIVEN FREEDOM OF TIME AND METHOD FOR TEACHING HER CHILD. THE TECHNIQUES USED TO OBSERVE HER TEACHING ARE DESCRIBED IN PS 000 491. THE CHILD WAS THEN ASKED TO SORT THE TOYS THE WAY HIS MOTHER TAUGHT HIM AND TO TELL THE REASON FOR EACH SORT. THE SCORING WAS ON A 6-POINT SCALE, A POINT BEING GIVEN FOR EACH CORRECT SORT, FOR A PARTIAL EXPLANATION OF EACH SORT, AND FOR A FULL EXPLANATION OF EACH SORT. THE COMPLETE SET OF PROJECT MANUALS COMPRISES PS 000 475 THROUGH PS 000 492. (DR)

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THE COGNITIVE ENVIRONMENTS OF URBAN PRE-SCHOOL CHILDREN

Robert D. Hess, Principal Investigator

MANUAL OF INSTRUCTIONS

FOR ADMINISTERING AND SCORING

TOY SORTING TASK

The measures described in this manual were developed in the project, Cognitive Environments of Urban Pre-School Children, supported by: Research Grant #R-34 from the Children's Bureau, Social Security Administration, and the Early Education Research Center, National Laboratory in Early Education, Office of Education, both of the U.S. Department of Health, Education, and Welfare; the Division of Research, Project Head Start, U.S. Office of Economic Opportunity; the Ford Foundation Fund for the Advancement of Learning; and grants-in-aid from the Social Science Research Committee of the Division of Social Sciences, University of Chicago.

## THE COGNITIVE ENVIRONMENTS OF URBAN PRE-SCHOOL CHILDREN

The research sample for the Cognitive Environment Study was composed of 163 pairs of Negro mothers and their four-year-old children, from three socioeconomic classes, defined by father's occupation and parents' education: upper-middle, professional and executive, with college education; upper-lower, skilled and blue collar, with high school education; lower-lower, semiskilled and unskilled, with no greater than tenth-grade education; a fourth group included father-absent families living on public assistance, otherwise identical to the lower-lower class group.

Subjects were interviewed in the home, and mothers and children were brought to the University of Chicago campus for testing, when the children were four years old. Follow-up data were obtained from both mother and child when the child was six years of age, and again at seven years.

Principal Investigator for the project is Professor Robert D. Hess, formerly Director, Urban Child Center, University of Chicago, now Lee Jacks Professor of Child Education, School of Education, Stanford University.

Co-Investigator for the follow-up study is Dr. Virginia C. Shipman, Research Associate (Associate Professor) and Lecturer, Committee on Human Development, and Director, Project Head Start Evaluation and Research Center, University of Chicago, who served as Project Director for the pre-school phase of the research.

Dr. Jere Edward Brophy, Research Associate (Assistant Professor), Committee on Human Development, University of Chicago, was Project Director for the follow-up study and participated as a member of the research staff of the pre-school study.

Dr. Roberta Meyer Bear, Research Associate (Assistant Professor), Committee on Human Development, University of Chicago, participated as a member of the research staff during the pre-school and follow-up phases of the project and was in charge of the manuscript preparation during the write-up phase of the research.

Other staff members who contributed substantively to the project include Dr. Ellis Olim (University of Massachusetts, Amherst), who was responsible for the major analysis of maternal language; Dr. David Jackson (Toronto, Ontario), who was involved in early stages of development of categories for the analysis of mother-child interaction, and participated in the processing and analysis of data; Mrs. Dorothy Runner, who supervised the training and work of the home interviewers, acted as a liason with public agencies, and had primary responsibility for obtaining the sample of subjects; and Mrs. Susan Beal, computer programmer.

## COGNITIVE ENVIRONMENT STUDY


### TOY SORTING TASK MANUAL\*

SUMMER 1967

#### INTRODUCTION

The toy sorting task was administered during the subjects' second visit to the university for testing and was the first of the three interaction tasks to be presented. It was relatively easier than the subsequent tasks and involved stimulus objects familiar to all the children. Consequently it was useful not only for eliciting mother-child interaction but also for allowing the subjects to become acclimated to the deliberate teaching situation and, more particularly, to cognitive sorting tasks. Following the completion of the toy sorting task the more difficult block sorting task was administered.

#### MATERIALS

Nine toys and a partitioned board were used for this task. The board was a 9" by 18" brown slate divided into three equal sections by white lines (). The division of the board into three sections served to emphasize the distinctiveness of the three groups to be formed later. The toys used include three small chairs (dollhouse furniture), three plastic picnic spoons, and three plastic cars. The three types of objects were selected because they were assumed to be familiar to all the children. Among each type of toy (cars, chairs, spoons), one was red, one yellow, and one green. Thus the nine toys could be sorted into three groups in either of two ways: by color (red toys, green toys, yellow toys) or by object (cars, chairs, spoons).

\*We wish to acknowledge the contribution of Mrs. Mildred Levine, who assumed primary responsibility for the design of this task as a research instrument.

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### TOY SORTING TASK MANUAL

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#### PROCEDURE

The two sorting methods were taught to the mother while the child was out of the room. The specific instructions were as follows:

(Begin with the board empty, and the toys in random order off the board.)

- 1) HERE ARE SOME TOYS. THERE ARE DIFFERENT WAYS THEY CAN BE PUT TOGETHER ON THE BOARD.

(sort by object) THESE GO TOGETHER BECAUSE THEY'RE ALL...  
(pause). (Point to each group and elicit answer: spoons,  
chairs, trucks (cars).)

- 2) THE TOYS CAN BE PUT TOGETHER IN ANOTHER WAY, TOO. (take toys off board)

(Sort by color; random placement within each section) THESE GO TOGETHER BECAUSE THEY'RE ALL... (pause). (point to each - red,  
yellow, green)

I'D LIKE YOU TO TEACH \_\_\_\_\_ WHAT I HAVE TAUGHT YOU: TO PUT THE TOYS TOGETHER IN THESE TWO WAYS. I'LL BE OUT IN THE HALL WHILE YOU TEACH HIM. AFTER YOU'RE SURE HE UNDERSTANDS HOW TO PUT THE TOYS TOGETHER IN THESE TWO WAYS, AND KNOWS WHY THE TOYS IN EACH GROUP BELONG TOGETHER, CALL ME BACK INTO THE ROOM. I'LL ASK HIM TO PUT THE TOYS ON THE BOARD IN THE TWO WAYS YOU HAVE TAUGHT HIM ... AND TO DO IT WITHOUT ANY HELP FROM ME OR FROM YOU. TAKE AS MUCH TIME AS YOU NEED TO TEACH HIM. WHEN YOU'VE FINISHED, BE SURE TO CALL ME BACK INTO THE ROOM.

The tester then brought in the child and left the room. The mother was allowed complete freedom of time and method. When she finished and summoned the tester, the child was asked to repeat the sorts:

(after tester is called back into the room: take toys off board and randomize)

- 1) CAN YOU SHOW ME ONE OF THE WAYS TO PUT THE TOYS ON THE BOARD THAT YOUR MOTHER TAUGHT YOU?

(point to each group of toys; 3 in each sort)  
THESE GO TOGETHER BECAUSE THEY'RE ALL ...  
(spoons, chairs, trucks (cars); red, yellow, green)

- 2) NOW CAN YOU SHOW ME THE OTHER WAY TO PUT THE TOYS ON THE BOARD THAT YOUR MOTHER TAUGHT YOU?

In general, the child was allowed three trials at sorting (i.e., two



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### TOY SORTING TASK MANUAL

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chances to get the second sort, since the children can usually remember one of them).

The child's performance on the post-task test was scored later.

#### SCORING

Points were awarded for post-teaching performance on the following basis:

<u>Criterion</u>	<u>Score</u>
1. Sorts correctly into 3 groups by object (cars, chairs, spoons)	0 or 1
2. Partially explains object sort (names one or two groups)	0 or 1
3. Fully explains object sort (names all 3 groups)	0 or 1
4. Sorts correctly into 3 groups by color (red, yellow, green)	0 or 1
5. Partially explains color sort (names one or two groups)	0 or 1
6. Fully explains color sort (names all 3 groups)	0 or 1

In combination these scores yield a range from 0 (neither sort correctly formed) through 6 (both sorts correctly formed and fully explained). Subscores (sorting vs. verbalizing; object vs. color) may also be obtained. Points for verbalization were not awarded unless the child previously sorted correctly (exactly 3 groups, clearly differentiated). Points were credited whenever the child met criteria without help, including cases where the child corrected earlier errors on his second chance and also cases where the child first responded correctly but then became confused under continued questioning. Responses following probing by the tester were allowed to raise the child's score (when they involved passing an additional criterion) but not to lower it (since probing may have induced confusion or inhibition).

Probing by the tester was restricted to rephrasing of the questions and attempts to clarify the child's intent when it was unclear whether he had

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### TOY SORTING TASK MANUAL

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finished an intended sort or which toys were intended to be in particular groups. Probing continued (when necessary) until the tester ascertained both which toys were considered as members of a group and the total number of groups.

NOTE: For a description of the recording techniques, see "MOTHER-CHILD INTERACTION MANUAL OF RECORDING AND OBSERVATION TECHNIQUES".